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Imagery analysis report

Recent SLBM Developments in China (S)

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RECENT SLBM DEVELOPMENTS IN CHINA (S)

INTRODUCTION

1. (S/D) Recent satellite imagery of submarine-launched ballistic missile (SLBM)-related facilities in China (Figure 1) indicates that the Chinese SLBM program is entering a phase that will likely include land-based and at-sea flight testing. However, the delays in the development of a nuclear-powered ballistic missile submarine (SSBN), as evidenced by the propulsion problems associated with the Han-class nuclear-powered attack submarine (SSN), continue to plague the program.

BASIC DESCRIPTION

2. (S/D) SLBM activity underway at the Wuzhai Missile Test Complex [] suggests that land-based flight testing of the missile may begin at any time, possibly this year. The Golf-class ballistic missile submarine (SSB) and support facilities at Xiaopingdao Submarine Base [] are being readied to continue the program with at-sea tests. Concurrently, the Lushun Optical Tracking Facility [] which provides range control for the SLBM at-sea test range, is nearly complete. These factors, when coupled with indications that preparations for series production of SLBM rocket motors may be underway at the Hohhot Solid Propellant Complex [] suggest that an extensive flight test program is being prepared. A successful flight test program, however, will not result in even a modest SLBM force until the Chinese solve their naval nuclear reactor problems.

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Nuclear Submarine Propulsion Problems

3. (S/D) Recent imagery of Han SSN unit 2 (402 PN) at Huludao Naval Base and Shipyard [] suggests that the propulsion problems that have delayed the commencement of sea trials may be nearly solved. Outfitting of Han 402 began soon after its launch []. Little work on the propulsion system was noted until the spring of 1978, when activity in the reactor area began. Work on the reactor continued for nearly a year until the spring of 1979, when work ceased and the reactor access was covered. A resumption of work within the reactor of Han 402 was observed [] when the two cylindrical tanks that are usually on the outfitting barge were removed and placed at the end of the outfitting pier. A small probable environmental reactor access shed was on the

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FIGURE 1. LOCATIONS OF RECENT SLBM ACTIVITY IN CHINA

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outfitting barge in place of the two tanks. This shed is identical to one that was last seen in 1973 when Han SSN unit 1 was in the shipyard for replacement of its steam generators. [] the reactor area had been uncovered, revealing the top of the reactor. In addition, two outer hull superstructure sections had been returned alongside Han 402 after having recently been moved to the head of the launching dock (Figures 2 and 3).

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4. (S/D) Although the specific problems associated with the Han 402 propulsion system are not known, two assumptions can be made: The main problem seems to be in the reactor rather than the steam generators as in the case of Han 401; and the delay in outfitting was probably caused by the failure of a major component within the reactor. The delay in acquiring a replacement for the faulty component (or components) probably resulted in the long period of inactivity between the spring of 1979 [] [] The propulsion problems connected with Han 401 and 402 may have delayed the launching of the SSBN inside the construction hall at Huludao and therefore postponed the initial operational capability of a Chinese SLBM force.

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SLBM-Related Activity at Wuzhai

5. (S/D) SLBM-related test activity was observed at Wuzhai Missile Test Complex [] [] The activity began with the sighting of an SLBM trailer and two crated ejection test dummies (ETDs) at the Wuzhai SSM Support Facility [] The support facility has subsequently supported the test activity underway at Wuzhai SSM Research/Development/Training Launch Site A1/A2/A3 [] The activity has resulted in at least two and possibly three SLBM popup ejection tests from the SLBM test position at launch site A2. The first confirmed test took place [] [] the environmental cover was observed rolled back from the SLBM test position, and an expended ETD was nearby (Figure 4). An earlier test possibly occurred [] An object, which may have been an expended ETD or instrumented structural test vehicle (STV), was seen at the complex rail-to-road transfer point []

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6. (S/D) The appearance in early June of two pieces of equipment not associated with the popup testing of ETDs indicates that testing of a more complex nature may soon begin. An SLBM transporter, designed to handle either the instrumented STV or an actual SLBM, was sighted in the support facility on [] In addition, a short-range ballistic missile (SRBM) transporter/erector (T/E) was sighted at the support facility on imagery of 4 June, and a second SRBM T/E had arrived by 12 June. The nature of the association of this SRBM equipment with SLBMs is unknown, but the equipment could be used either for handling a missile at the SLBM test position at launch site A2 or for erecting a missile for a pad launch at launch site A1.

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7. (S/D) The popup testing of ETDs was apparently successful, [] the two expended ETDs, along with other SLBM-associated equipment, were in the support facility (Figure 5). The next phase of SLBM testing could begin at any time, possibly this year. This would include flight testing, probably both short and long burn, from the pad at test site A1, followed by popup launches from the launch silo at site A2. Once land-based testing has been completed, at-sea tests involving the Golf SSB should follow.

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Golf SSB Overhaul

8. (S/D) The Golf SSB arrived at Lushun Naval Base and Shipyard [] [] much of the Golf's outer hull deck superstructure had been removed. Dismantlement of the sail casing began [] both missile launch tubes had been exposed (Figure 6). This is the first time that repairs/modifications of the Golf sail have been observed since the launch tubes were installed at Lushun in 1970. The sections of the outer hull superstructure were moved alongside the larger graving dock, which was flooded [] The overhaul evidently will require an undetermined amount of time in the graving dock.

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9. (S/D) Because the Golf underwent a protracted major overhaul at Luda Shipyard Dairen [] [] from 1975 through 1978, the reasons for the current overhaul are not clear. In addition, the eight years of testing and training with the missile ejection system, both at sea and on land, indicate the Golf's reliability. The Golf is most likely being readied to conduct live at-sea firings of an SLBM once land-based flight testing has been completed. Also, the Chinese may have decided to install additional internal equipment so that once initial SLBM at-sea testing is complete, the Golf could serve as a fleet ballistic missile submarine. This would give the Chinese an opportunity to conduct crew and systems training under operational conditions until an SSBN is available.

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Improvements to SLBM At-Sea Test Support Facilities

10. (S/D) Improvements currently underway at Xiaopingdao Submarine Base [] are apparently intended to increase the capability of that base to support the flight test phase of the SLBM program. These improvements include the construction of a high-bay probable final missile checkout building, completion of two new support buildings, road and quaywall improvements, and an excavation for a possible partially underground bunker or building (Figure 7). In addition, a torpedo loading pier,

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built to support the conventional attack submarines based here, has recently been completed. Once flight testing is complete, the base will probably serve both as a research and development base for future submarine weapons programs and as an operational base for a modest SSBN force in the mid-to-late 1980s.

11. (S/D) The Lushun Optical Tracking Facility, expansion of which began in mid-1976, is nearly complete (Figure 8). The facility is probably being readied to serve as a range control facility when the Chinese begin at-sea missile launches from the Lushun SLBM Operating Area. Two seven-element helix telemetry antennas were installed on the main instrumentation building in late 1979. Work to complete the optical instrumentation building began [redacted] The main control building (not annotated), which has a large-vista window overlooking the probable SLBM launch area, and one new instrumentation/control building were recently completed. The Lushun Facility is part of a new at-sea SLBM test range,¹ which is being established to monitor missile launches with flight trajectories over the Shandong Peninsula and impacts in the Yellow or Philippine Seas.

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12. (S/D) [redacted] the launch tube had been pulled out of the SLBM popup test stand at Xiaopingdao SLBM Support Facility [redacted] and was standing upright next to the test stand. Nearby were the boom of the SLBM-associated crane and two expended ETDs from popup tests conducted in the summer and fall of 1978. The test stand has been inactive since the 1978 tests. The launch tube was probably removed in order to facilitate maintenance/modification work on the ejection mechanism underneath the test stand.

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Possible SLBM Series Production

13. (S/D) Construction at Hohhot Solid Propellant Complex since mid-1978 indicates that preparations may be underway for series production of the SLBM at the complex. The Hohhot complex has been the primary developmental facility for SLBM solid propellant rocket motors since the late 1960s.

14. (S/D) Significant construction at the Hohhot complex since mid-1978 has consisted of a new cast/cure building, two new mix buildings with an associated control building, and new fabrication facilities. The new cast/cure building contains four large rocket motor casting pits (Figure 10). Vacuum casting bells identified at the building in December 1979 can accommodate rocket motors [redacted] more than sufficient for the SLBM motors. A smaller casting bell identified at one of the older cast/cure buildings in mid-1979 was just large enough to accommodate the

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SLBM first-stage motor. The other cast/cure buildings of similar size probably have the same capacity. The total number of casting/curing pits at the complex is now ten. Assuming that a rocket motor can be cured in three to four days, 15 to 20 rocket motors could be produced at the complex per week.

15. (S/D) The new cast/cure capacity will be supported by the two new mix buildings. There are indications that the older mix buildings at the complex have been undergoing internal modifications since mid-1979, which suggests that they are being prepared for some new type of activity. The total number of mix buildings at the Hohhot complex is now seven.

SUMMARY

16. (S/D) The Chinese SLBM program was slowed by technological and related developmental problems in the 1970s. The increase in activity in 1980 suggests that although many problems remain, the development of an SLBM force remains a high priority in China.

DOCUMENT

1. NPIC. [REDACTED] IAR-0027/79, *New SLBM At-Sea Test Range, PRC (TSR)*, Sep 79 (TOP SECRET
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